

SEQUENCE LISTING

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<120> METHODS AND MEANS FOR OBTAINING MODIFIED PHENOTYPES

<130> 021565-060

<140> 09/287,632

<141> 1999-04-07

<150> US 09/127,735

<151> 1998-08-03

<150> US 09/056,767

<151> 1998-04-08

<160> 7

<170> PatentIn Ver. 2.0

<210> 1

<211> 854

<212> DNA

<213> Potato virus Y

<220>

<223> fragment of the NIa ORF

<400> 1

aagctttgaa gattgatttg atgccacata acccactcaa aatttgtgac aaaacaaatg 60  
gcattgccaa atttcctgag agagagttcg agctaaggca gactgggcca gctgtagaag 120  
tcgacgtgaa ggacatacca gcacaggagg tggacatga agctaaatcg ctcattgagag 180  
gcttgagaga cttcaaccca attgcccaaa cagttttag gctgaaagta tctgttgaat 240  
atgggacatc agagatgtac ggttttggat ttggagcgtataatagcg aaccaccatt 300  
tgttcaggag ttataatggt tccatggagg tacgatccat gcacggtaca ttcagggtaa 360  
agaatctaca cagtttgagc gttctgccaa ttaaaggtag ggacatcatc ctcattaaaa 420  
tgccaaaaga tttccctgtc tttccacaga aattgcattt ccgagctcct acacagaacg 480  
aaagaatttg tttagttgga accaactttc aggagaagta tgcattcgctg atcatcacag 540  
aagcaagcac tacttacaat ataccaggca gcacattctg gaagcattgg attgaaacag 600  
ataatggaca ctgtggacta ccagtggtga gcactgccga tggatgtcta gtcggaattc 660  
acagtttggc aaacaatgca cacaccacga actactactc agccttcgat gaagattttg 720  
aaagcaagta cctccgaacc aatgagcaca atgaatgggt caagtcttgg atttataatc 780  
cagacacagt gttgtggggc ccgttgaaac ttaaagacag cactcctaaa gggttattta 840  
aaacaacaaa gctt 854

<210> 2

<211> 2186

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: coding region  
of the Gusd CoP construct

<220>

<221> misc\_structure

<222> ()..)

<223> deficient Gus coding region

<220>

<221> misc\_feature

<222> ()..(2186)

<223> antisense to the 5' end of the Gus coding region

<400> 2

```

atggtacgtc ctgtagaaac cccaaccggt gaaatcaaaa aactcgacgg cctgtgggca 60
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gaaagccggg caattgctgt gccaggcagt tttaacgatc agttcgccga tgcagatatt 180
cgtaattatg cgggcaacgt ctggtatcag cgcgaaagtct ttataccgaa aggttgggca 240
ggccagcgta tctgtctgctg tttcgatgctg gtcactcatt acggcaaagt gtgggtcaat 300
aatcaggaag tgatggagca tcagggcggc tatacgccat ttgaagccga tgtcacgcgc 360
tatgttattg ccgggaaaaag tgtacgtatc accgtttgtg tgaacaacga actgaactgg 420
cagactatcc cgccgggaat ggtgattacc gacgaaaacg gcaagaaaaa gcagtcttac 480
ttccatgatt tctttaacta tgccggaatc catcgccagc taatgctcta caccacgcgc 540
aacacctggg tggacgatat ctaccgcgtt cgcgtcggca tccggtcagt ggcagtgaag 600
ggcgaacagt tcctgattaa ccacaaaccg ttctacttta ctggctttgg tgcgtcatgaa 660
gatgcggact tgcgtggcaa aggattcgat aacgtgctga tgggtgcacga ccacgcatta 720
atggactgga ttggggccaa ctctaccgt accctgcatt acccttacgc tgaagagatg 780
ctcgactggg cagatgaaca tggcatcgtg gtgattgatg aaactgctgc tgcggcttt 840
aacctctctt taggcattgg tttcgaagcg ggcaacaagc cgaaagaact gtacagcgaa 900
gaggcagtca acggggaaac tcagcaagcg cacttacagg cgattaaaga gctgatagcg 960
cgtgacaaaa accaccaag cgtggtgatg tggagtattg ccaacgaacc ggataccggt 1020
ccgcaagggtg cacgggaata tttcgcgcca ctggcggaag caacgcgtaa actcgaccgc 1080
acgcgtccga tcacctgctg caatgtaatg ttctgcgacg ctcacaccga taccatcagc 1140
gatctctttg atgtgctgtg cctgaaccgt tattacggat ggtatgtcca aagcggcgat 1200
ttggaaacgg cagagaaggt actggaaaaa gaacttctgg cctggcagga gaaactgcat 1260
cagccgatta tcatcaccga atacggcgctg gatacggttag ccgggctgca ctcaatgtac 1320
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gatcgcgta gcgcgctcgt cggtaaacag gtatggaatt tcgccgattt tgcgacctcg 1440
caaggcatat tgcgcgttgg cggtaacaag aaagggatct tcaactcgca ccgcaaaccg 1500
aagtcggcgg cttttctgct gcaaaaacgc tggactggca tgaacttcgg tgaaaaaccg 1560
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atcaccattc ccggcgggat agtctgccag ttcagttcgt tgttcacaca aacggtgata 1800
cgtacacttt tcccggcaat aacatacggc gtgacatcgg cttcaaattg cgtatagccg 1860
ccctgatgct ccatcacttc ctgattattg acccacactt tgccgtaatg agtgaccgca 1920
tcgaaacgca gcacgatacg ctggcctgcc caacctttcg gtataaagac ttcgcgctga 1980
taccagacgt tgcccgcata attacgaata tctgcacgga cgaactgatc gttaaaactg 2040
cctggcacag caattgcccg gctttcttgt aacgcgcttt cccaccaacg ctgatcaatt 2100
ccacagtttt cgcgatccag actgaatgcc cacaggccgt cgagtttttt gatttcacgg 2160
gttggggttt ctacaggacg taccat

```

<210> 3

<211> 208

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:5'UTR of  
Johnson mosaic virus

<400> 3

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ccttacaaag atcttcgcag tcgttcacac acagattcac cgaaccattc ttgttagctc 120
tcgcacagag ataagcagga aaccatggca ggtgagtggg acacagtttg atagtaagag 180
aaaccagagg aagactgcag gtacccgc 208
```

<210> 4

<211> 1150

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Subterannean  
clover virus S4 promoter with S7 enhancer

<400> 4

```
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gcttatgagg aataaagaat gattaatatt gtttaatttt attccgcgaa gcggtgtggt 120
atgtttttgt tggagacatc acgtgactct cacgtgatgt ctccgcgaca ggctggcacg 180
gggcttagta ttaccccggt ccggatcaga gacatttgac taaatattga cttggaataa 240
tagcccttgg attagatgac acgtggacgc tcaggatctg tgatgctagt gaagcgctta 300
agctgaacga atctgacgga agagcggaca tacgcacatg gattatggcc cacatgtcta 360
aagtgtatct ctttacagct atattgatgt gacgtaagat gctttacttc gcttcgaagt 420
aaagtaggaa attgctcgct aagttattct tttctgaaag aaattattta attctaatta 480
aattaaatga gtcgctataa atagtgtcga tgctgcctca catcgatttc ttcttcgcat 540
cgtctgttct ggttttaagc gggatccagg cctcgagata tcggtacctt gttattatca 600
ataaaagaat ttttattggt attgtgttat ttggtaattt atgcttataa gtaattctat 660
gattaattgt gaattattaa gactaatgag gataataatt gaatttgatt aaattaactc 720
tcgaagcta tatgtctttc acgtgagagt cacgtgatgt ctccgcgaca ggctggcacg 780
gggcttagta ttaccccggt ccgggatcag agacatttga ctaaagtgtg acttgggaata 840
atagcccttg gattagatga cacgtggacg ctcaggatct gtgatgctag tgaagcgctt 900
aagctgaacg aatctgacgg aagagcggac aaacgcacat ggactatggc ccaactgcttt 960
attaaagaag tgaatgacag ctgtctttgc ttcaagacga agtaaagaat agtggaaaac 1020
gcgtaaagaa taagcgtact cagtacgctt cgtggcttta tataaatagt gcttcgtctt 1080
attcttcggt gtatcatcaa cgaagaagtt aagctttggt ctgcgtttta atgatcgatg 1140
gccagtcgac 1150
```

<210> 5

<211> 1052

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: subterranean  
clover virus promoter S4 with S4 enhancer

<400> 5

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ggatccaggc ctcgagatat cggtagcttg ttattatcaa taaaagaatt tttattgtta 60
ttgtgttatt tggaattta tgcttataag taattctatg attaattgtg aattattaag 120
```

```

actaatgagg ataataattg aatttgatta aattaactct gccaagctat atgtctttca 180
cgtgagagtc acgtgatgtc tccgcgacag gctggcacgg ggcttagtat taccocgtgc 240
cgggatcaga gacatttgac taaatgttga cttggaataa tagcccttgg attagatgac 300
acgtggacgc tcaggatctg tgatgctagt gaagcgctta agctgaacga atctgacgga 360
agagcggaca aacgcacatg gactatggcc cactgcttta ttaaagaagt gaatgacagc 420
tgtctttgct tcaagacgaa gtaaagaata gtggaaaacg cgtggatcca ggccctcgaga 480
tatcggtacc ttgttattat caataaaaga atttttattg ttattgtgtt atttggtaat 540
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ttgaatttga ttaaattaac tctgcgaagc tatatgtctt tcacgtgaga gtcacgtgat 660
gtctccgcga caggctggca cggggcttag tattaccccg tgccgggac agagacattt 720
gactaaatgt tgacttgga taatagccct tggattagat gacacgtgga cgctcaggat 780
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atggactatg gccactgct ttattaaaga agtgaatgac agctgtcttt gcttcaagac 900
gaagtaaaga atagtggaaa acgcgtaaag aataagcgta ctcagtacgc ttcgtggctt 960
tatataaata gtgcttcgct ttattcttcg ttgtatcatc aacgaagaag ttaagctttg 1020
ttctgcgttt taatgatcga tggccagtcg ac 1052

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<210> 6

<211> 1583

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: coding  
sequence of the desaturase CoP construct

<220>

<221> misc\_feature

<222> (1)..(480)

<223> corresponding to the 5' end of the  
delta12-desaturase (fad2) coding region, in sense  
orientation

<220>

<221> misc\_feature

<222> (1101)..(1583)

<223> corresponding to the 5' end of the  
delta12-desaturase (fad2) coding region, in anti  
sense orientation

<400> 6

```

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cctctctctt acttggtctg gccactctat tgggctgtgc aaggctgtgt cctaactggt 120
atctgggtca tagcccacga atgcggtcac cacgcattca gcgactacca atggctggat 180
gacacagttg gtcttatctt ccattccttc ctctctgtcc cttacttctc ctggaagtat 240
agtcacgcgc gtcaccattc caacactgga tccctcgaaa gagatgaagt atttgtecca 300
aagcagaaat cagcaatcaa gtggtacggg aaataacctc acaacctctt tggacgcac 360
atgatgttaa ccgtccagtt tgctctcggt tggcccttgt acttagcctt taacgtctct 420
ggcagaccgt atgacgggtt cgcttgccat ttcttcccca acgctcccat ctacaatgac 480
cgagaacgcc tccagatata cctctctgat gcgggtattc tagccgtctg ttttggctct 540
taccgttacg ctgctgcaca agggatggcc tcgatgatct gcctctacgg agtaccgctt 600
ctgatagtga atgcgttcct cgtcttgatc acttacttgc agcacactca tccctcgttg 660
cctcactacg attcatcaga gtgggactgg ctcaggggag ctttggctac cgtagacaga 720
gactacggaa tcttgaacaa ggtgttcac aacattacag acacacacgt ggctcatcac 780
ctgttctcga caatgccgca ttataacgca atggaagcta caaaggcgat aaagccaatt 840

```

```

ctgggagact attaccagtt cgatggaaca ccgtggtatg tagcgatgta tagggaggca 900
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aacaataagt tatgagcatg atggtgaaga aattgtcgac ctttctcttg tctgtttgtc 1020
ttttgttaaa gaagctatgc ttcgttttaa taatcttatt gtccattttg ttgtgttatg 1080
acattttggc tgctcattat gttcagtaac atctaccctc gcaaccctt ctttaccgtt 1140
cgcttgggca gatatccaga cggctctctg aatttccgat tcatgttccc ggtgggctcc 1200
tgtttgacct gccaatgtga gtactacgca ggttctccca acaactccat aaagggcatg 1260
gtgaactaac gactaaagac gaaaccctgt ttatgaagta gagaaagctc cctaggtcac 1320
aaccttacca ctgccgtac tgatatgaag gtccctcttca ttccctgctc ctccctcctt 1380
accttctatt ctggttgaca cagtaggtcg gtaaccatca gcgacttacg caccactggc 1440
gtaagcaccg gatactgggt ctatggtcaa tctgtgtcg gaactgtccg ggttatctca 1500
ccggttcggt tcattctctc tccgactccc tctctctctc tcattaacca ccgctgcac 1560
atcttcgtac tccgatatta cta
1583

```

<210> 7

<211> 786

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: intron 2 of  
the Flaveria trinervia purvate orthophosphate  
dikinase

<400> 7

```

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gttaattagt atgattataa taatatagtt gttataattg tgaaaaaata atttataaat 120
atattgttta cataaacaac atagtaatgt aaaaaaatat gacaagtgtat gtgtaagacg 180
aagaagataa aagttgagag taagtatatt atttttaatg aatttgatcg aacatgtaag 240
atgatatact agcattaata tttgttttaa tcataatagt aattctagct ggtttgatga 300
attaaatatac aatgataaaa tactatagta aaaataagaa taaataaatt aaaataatat 360
ttttttatga ttaatatgtt attatataat taaatatcta taccattact aaatatattta 420
gtttaaaagt taataaatat tttgttagaa attccaatct gcttgtaatt tatcaataaa 480
caaaatatta aataacaagc taaagtaaca aataatatca aactaataga aacagtaatc 540
taatgtaaca aaacataatc taatgctaat ataacaaagc gcaagatcta tcattttata 600
tagtattatt ttcaatcaac attcttatta atttctaaat aatacttgta gttttattaa 660
cttctaaatg gattgactat taattaaatg aattagtcga acatgaataa acaaggtaac 720
atgatagatc atgtcattgt gttatcattg atcttacatt tggattgatt acagttggga 780
aagctt
786

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